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<b>Author(s)</b>	Culligan, Eamonn P.; Sleator, Roy D.; Marchesi, Julian R.; Hill, Colin
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**Table S2. Putative lipocalin motifs in BrpA and its homologues**

	LIPOCALIN MOTIF	[DENG]	{A}	[DENQG STARK]	X (0,2)	[DENQ ARK]	[UVFY]	{CP}	G	{C}	W	[FYWLRH]	{D}	[LIVMTA]
<i>Clostridium</i> sp. KLE 1755	NPSRLAGAWYLP	N	P	S	–	R	L	A	G	A	W	Y	L	V
BrpA SMG 6	LFSSMRDSIYLIPS	L	F	S	–	S	M	R	D	S	I	Y	L	I
<i>Prevotella</i> sp. CAG:873	DVHGALHSWWFVP	D	V	H	–	G	A	L	H	S	W	W	F	V
<i>Prevotella buccalis</i> ATCC 35310	VWQGMLDDSLFMF	V	W	Q	–	G	M	L	D	D	S	L	F	M
<i>Prevotella</i> sp. CAG:279	DVHSLHSAWAFVP	D	V	H	–	S	W	L	H	S	W	A	F	V
<i>Prevotella marshallii</i> DSM 16973	PQTDFITWSFLP	P	Q	T	–	D	F	I	T	S	W	S	F	L
<i>Lachnospiraceae</i> bacterium <sup>1</sup>	NPSQMADKWYLP	N	P	S	–	Q	M	A	D	K	W	Y	L	V
<i>Prevotella saccharolytica</i> F0055	PQTDFITWSFLP	P	Q	T	–	D	F	I	T	S	W	S	F	L
<i>Clostridium nexile</i> CAG:348	KPYQFANSSFIIL	K	P	Y	–	Q	F	A	N	S	S	F	I	I
<i>Firmicutes</i> bacterium CAG:24	NALTGRLGDFWNIVP	N	A	L	TG	R	L	G	D	F	W	N	I	V
<i>Firmicutes</i> bacterium CAG:65	GSDRIDGAVSLLL	G	S	D	–	R	I	D	G	A	V	S	L	L

<sup>1</sup>strain 3\_1\_57FAA\_CT1

**Table S2.** A lipocalin motif was found in a homologue of BrpA from *Clostridium* sp. KLE1755. Lipocalin proteins can bind hydrophobic molecules such as carotenoids and retinoids. The top ten BLASTP homologues to BrpA were aligned to compare these protein sequences and identify putative lipocalin motifs. The consensus motif is displayed on the top row of Table 4. Residues that match the consensus are shown in green and mismatches are shown in red